Chapter 4
Other Impact Considerations

4.1 GROWTH-INDUCING IMPACTS

Population in the Animas-La Plata Project (ALP Project) area has been growing at more than twice the national average for several years. This is a reflection of the strength of the oil and gas industries, the mining and energy industries, and the growth of tourism in the area. The project area has become a desirable retirement area for many as well. Section 3.12 of Chapter 3, Affected Environment and Environmental Consequences, presents information on the population growth, tourism, and industry trends for La Plata and Montezuma Counties in Colorado, and San Juan County in New Mexico.

The availability of municipal and industrial (M&I) project water from the ALP Project will likely be secondary to the existing rapid rate of population growth. Should the ALP Project not be developed, and project M&I water not made available, it is likely that growth would still continue without its influence well into the second decade of the 2000s in La Plata County, with slower growth in San Juan and Montezuma Counties. However, a water supply would need to be obtained by some alternative means.

The provision of a secure and reliable water supply for the Ute Mountain Ute and Southern Ute Indian Tribes (Colorado Ute Tribes) would promote a certain amount of growth on the reservations as new residences are built. The development of recreation and tourism facilities (e.g., golf courses, resorts, dude ranches) could also stimulate growth as it would make the region a more attractive retirement area and would provide additional opportunities for employment. It is not likely that this type of development would occur without a reliable water supply and development fund provided by the ALP Project.

4.2 CONNECTED, CUMULATIVE, AND RELATED ACTIONS

Section 1.5 in Chapter 1, Introduction, Purpose of, and Need for the Project, provides a definition of the connected, cumulative, and related actions as outlined under the provisions of the National Environmental Policy Act (NEPA). As mentioned in Chapter 1, the 1996 Final Supplement to the Final Environmental Statement (1996 FSFES) contained information on several connected, cumulative, and related actions (see pages I-11 through I-15) and is incorporated by reference into this Draft Supplemental Environmental Impact Statement (DSEIS). Connected actions addressed in the 1996 FSFES included the San Juan River Basin Recovery Implementation Program (SJRBRIP) and the Navajo Unit of the Colorado River Storage Project (CRSP). Cumulative and related actions included the Navajo Unit; the Dolores Project; the Pine River, Florida, and Mancos Projects; the Navajo Indian Irrigation Project (NIIP); the Uranium Mill Tailings Remedial Action (UMTRA) Project; and the Colorado River Basin Salinity Control Program.

This DSEIS includes updated information regarding Navajo Reservoir as a connected action. In addition, information about cumulative actions that were not addressed in the 1996 FSFES, or additional information gathered since 1996, are included, namely the NIIP, Jicarilla Apache Tribe Water Rights Settlement, the proposed Navajo-Gallup Water Supply Project (Navajo-Gallup Project), the completion of the Hogback Project, the Pine River Indian Irrigation District M&I Conversion Project (PRIIP), and various Colorado transportation improvement projects.

Because the United States owns and operates Navajo Reservoir and has pervasive Endangered Species Act (ESA) and Tribal Trust responsibilities in the San Juan River Basin, the project is designed to accommodate, to the extent possible, overlapping concerns. The actions described below summarize these United States responsibilities and how they are affected by the project.

4.2.1 Navajo Reservoir Operation and the San Juan River Basin Recovery Implementation Program

The 1996 FSFES contained information about the operation of Navajo Reservoir and the SJRBRIP. Because the operation of Navajo Reservoir is part of an ongoing study, this DSEIS includes updated and revised information regarding this connected action. Operation of Navajo Reservoir is a connected action to the ALP Project and other water resource activities in the San Juan River Basin, such as the NIIP. This connection stems from:

- Past ESA consultations which established and relied upon SJRBRIP and listed certain Reasonable and Prudent Alternatives (RPAs) to avoid jeopardy to the endangered species in question;

- San Juan River flow recommendations developed and approved by SJRBRIP; and

- The Bureau of Reclamation s (Reclamation) previous commitment to operate Navajo Reservoir for the benefit of endangered fish in the San Juan River Basin.

Consideration of Navajo Reservoir operation issues and impacts (e.g., flow regimes, riparian impacts, reservoir levels, reservoir recreation issues, trout fishing, and habitat issues) will be included in this DSEIS using existing data. However, this DSEIS will not serve as the environmental compliance document for Navajo Reservoir operation issues. Reclamation has initiated the environmental compliance process for Navajo Reservoir operation, which will continue separate from, but coordinated with, the ALP Project DSEIS.

4.2.1.1 Background Information

Navajo Dam and Reservoir is owned, operated, and maintained by Reclamation. Navajo Dam is located on the San Juan River about 44 miles upstream from Farmington, New Mexico. The reservoir created by the dam extends into the State of Colorado. The Navajo Unit is a storage unit of the CRSP and is subject to the terms of the Upper Colorado River Basin Compact, the Colorado River Storage Project Act of April 11, 1956 (70 Stat. 105), and the Act of June 13, 1962, authorizing the San Juan-Chama Project and NIIP. Since its original authorization, Congress has authorized/approved other purposes of the Navajo Unit such as the Jicarilla Apache Tribe Water Rights Settlement.

After completion of the Navajo Unit in December 1963, the focus of the criteria for releasing water from the dam was primarily on consistent flows and maintaining a maximum pool in Navajo Reservoir. Navajo Dam and Reservoir has a 30-year record of operations and provides water for irrigation, M&I uses, flood control, recreation, hydro power, and fish and wildlife benefits.

However, over the last decade, the focus of the criteria and associated pattern for releasing water from the dam has changed. This new focus is centered on the endangered fish species in the Colorado River

drainages such as the Colorado pikeminnow (*Ptychoecheilus lucius*) (formerly Colorado squawfish) and the razorback sucker (*Xyrauchen texanus*). These endangered fish use the stream tributaries to the mainstem Colorado River as spawning grounds. One of the major tributaries to the Colorado River is the San Juan River. The San Juan River originates in Colorado and flows across the northwesterly portion of New Mexico and then flows northwesterly into the State of Utah before emptying into the Colorado River.

Criteria for reservoir operation decisions that include the needs of endangered fish in the San Juan River are new to the operations decision process of the Navajo Unit. Operations that result from implementing flow recommendations for endangered fish will be different than historic operations of the past 30 years.

4.2.1.2 Relationship of Operation of Navajo Reservoir to the Animas-La Plata Project

Connected closely to any new operation scenario for Navajo Dam are the developments on tributary streams to the San Juan River. One of these streams is the Animas River, which originates in Colorado and empties into the San Juan River at Farmington, New Mexico.

The initial catalyst for considering a change in the operations of Navajo Dam occurred under the ESA Section 7 consultation in connection with the proposed construction of the ALP Project. A Draft Biological Opinion on the ALP Project, dated May 7, 1990, concluded that construction of the project would jeopardize the continued existence of an endangered species--the Colorado pikeminnow. During this time, new hydrological investigations suggested that additional flexibility would exist in the operation of Navajo Dam to help offset the negative impacts of constructing the project. By reducing late-fall and winter releases, water could be made available to increase spring peaks and return the San Juan River to a more natural hydrograph that would mimic pre-dam historic flow conditions. This flexibility in flow patterns would assist in developing an RPA for implementation of the ALP Project that would protect the Colorado pikeminnow and allow initial ALP Project construction efforts to move forward. Subsequently, a RPA was developed that required operation of Navajo Dam to mimic a natural hydrograph for the life of the ALP Project. The RPA was included in the October 25, 1991 Final Biological Opinion from the U.S. Fish and Wildlife Service (Service). Since no natural hydrograph has been defined or developed for the San Juan River, the RPA also included a commitment to help finance approximately seven years of research to determine the flow requirements for the endangered Colorado pikeminnow and razorback sucker (a candidate species at that time). Under the direction of the SJRBRIP Biology Committee, test releases were conducted and evaluated during the 1992-1998 research period. In exchange for this commitment, Phase I, Stage A of the ALP Project was approved, with a net depletion of 57,100 acre-feet/year (afy).

Subsequent to the release of the May 7, 1990 Draft Biological Opinion, Reclamation requested initiation of Section 7 consultation on the operations of Navajo Dam in a memorandum to the Service dated July 30, 1991. In that memorandum, Reclamation committed to operate Navajo Dam in concert with ongoing research to determine hydrologic conditions for fish and, thereafter, to operate Navajo Dam in the manner most consistent with endangered fish recovery for the life of Navajo Dam. It was also recognized that Reclamation would produce the necessary documents to comply with NEPA on any recommended changes to the operating criteria for Navajo Dam. On August 19, 1991, the Service concurred with Reclamation's request and extended the consultation period to allow completion of the research.

On February 26, 1996, a second Final Biological Opinion concerning critical habitat of native endangered fish species placed further restrictions on the allowable depletion. The opinion concluded

that the depletion of 57,100 afy could not be exceeded in any one year until all the elements of the RPA were completed and/or implemented. This limitation was waived in the event that Reclamation lowered winter releases from Navajo Dam and Reservoir to 300 cubic feet per second (cfs) to provide the extra flexibility in releases described in the hydrology section of the 1991 Biological Opinion. If that condition existed, then the ALP Project could maintain an average annual depletion of 57,100 afy.

A seven-year research period for the SJRBRIP resulting from consultation under the ESA was completed in 1998. In May 1999, the SJRBRIP Biology Committee provided flow recommendations for the San Juan River to assist in the recovery of endangered fish. These flow recommendations require approval of the Service and Reclamation before being implemented.

4.2.1.3 Navajo Operation Environmental Impact Statement

On October 29, 1996, Reclamation agreed under terms of a legal settlement with the San Juan Fly Fishing Federation to prepare an environmental impact statement (EIS) before initiating any permanent change in the operations at Navajo Dam under the SJRBRIP, and to complete compliance with NEPA before reducing flows below 500 cfs in the future.

Public scoping meetings on the operation of Navajo Dam and Reservoir took place during November 1999. A draft EIS is scheduled to be released during the fall of 2000, at which time public hearings will be held. The final EIS would be completed during the spring or early summer of 2001.

Additional information on the Navajo Dam operation is included in Attachment C, Navajo Reservoir Operation.

4.2.2 Navajo Indian Irrigation Project

The NIIP, an element of the CRSP, was authorized on June 13, 1962 (Public Law (P.L) 87-483, as amended by P.L. 91-416 on September 25, 1970). Its principal purpose is to irrigate 110,630 acres of land owned by the Navajo Nation in northwestern New Mexico, generally south of Farmington. The acreage through Block 8 which will be completed and in full operation by 2002, totals about 76,481 acres. Water is delivered from Navajo Dam through a series of tunnels, canals, and pipelines to the sprinkler systems that irrigate the agricultural land. The project began operation in 1976 with the first of 11 blocks. It was scheduled for completion in 1986, but funding delays have postponed the completion.

In 1991, a Biological Opinion was completed for the first 8 blocks. The Biological Opinion required that depletion be limited to that required by Blocks 1 through 6, 133,000 afy, plus 16,420 afy transferred from land not presently irrigated in the Hogback Project. Given that a substantial portion of the acreage in Blocks 1-6 was in conservation reserve, this allowed construction through Block 8. The acreage through Block 8, which will be completed and in full operation by 2002, totals about 76,481 acres.

In 1999 a Biological Assessment was prepared and a letter of concurrence from the Service was received by the Bureau of Indian Affairs (BIA) allowing completion of all 110,630 acres of irrigated land in 11 blocks with an average annual depletion of 280,600 af. This depletion is included in the baseline used to analyze the impacts of the ALP Project on water supply and the ability to meet the SJRBRIP flow recommendations. Construction is scheduled to be completed in 2012, with irrigation of the full 110,630 acres by 2022 as conservation reserve acreage is added back to the producing acreage. Eventually, the project depletion will drop to 270,000 afy as return flows reach equilibrium. No additional environmental compliance analysis pursuant to NEPA is planned for completion of the NIIP.

Flow recommendations for endangered fish can be met with the full depletion of 280,600 afy when the ALP Project is completed and depleting 57,100 afy.

4.2.3 Jicarilla Apache Tribe Water Rights Settlement

The Jicarilla Apache Tribe Water Rights Settlement Act of 1992 (106 Stat. 2237) provides the tribe the right to divert 6,500 afy of San Juan-Chama Project water from Heron Reservoir and the right to divert 33,500 afy from Navajo Reservoir or the Navajo River, of which 25,500 afy may be depleted. The tribe was also given the right to market this water through third-party contracts outside their reservation subject to approval of the Secretary of the Department of the Interior and requirements and conditions of state and federal law, inter-state compacts, and international law as they apply to the exercise of water rights held by non-federal, non-Indian entities. The tribe s water rights, based on historic and existing uses on their reservation, were also quantified, with a total annual diversion of 5,683 afy, or the quantity of water necessary to supply a depletion of 2,195 afy, whichever is less, and a net evaporation from existing stock ponds and reservoirs of 2,187 afy.

The water delivery provisions for future uses of the Jicarilla Apache Tribe Water Rights Settlement required certain events to occur before the provisions were enacted. All of these provisions have been met and on February 23, 1999, the Eleventh Judicial District Court, County of San Juan, State of New Mexico, entered a Partial Final Judgement and Decree adjudicating the tribe s water rights in the San Juan River system. Thus, the settlement is now in full effect.

The Jicarilla Apache Tribe s historic and San Juan-Chama Project rights listed above are included in the environmental baseline depletion used to analyze the impacts of the ALP Project on the water supply of the San Juan River Basin and the ability of the system to meet the SJRBRIP flow recommendations for endangered fish. The 2,195 afy of historic depletion is explicitly included and the 6,500 afy depletion from the San Juan-Chama Project is a part of the overall allocation for that project, which is also included in the baseline. The remaining 25,500 afy of depletion rights is not included in the baseline depletion. To obtain use of San Juan River system water, the Jicarilla Apache Tribe would have to complete Section 7 consultation with the Service and receive a favorable Biological Opinion allowing use of the water.

Alternately, with the third-party contracting provision of the Jicarilla Apache Tribe water contract, the tribe could negotiate with current users of water from Navajo Dam for the lease of this water as contracts held by these users expire. The tribe is presently involved in discussions with Reclamation and the Public Service Company of New Mexico (PNM) to lease 16,200 afy of their water rights to PNM. If successful, this use would place this portion of their depletion allocation within the baseline.

The Navajo Nation has also had discussions with PNM and Reclamation concerning leasing the 16,200 afy depletion associated with the power plant operation to PNM. The Jicarilla Apache Tribe and Navajo Nation have had joint discussions concerning the resolution of this issue, but the results of all negotiations are not final.

4.2.4 Navajo-Gallup Water Supply Project

The proposed Navajo-Gallup Project would provide domestic and M&I water to portions of the Navajo Nation Indian Reservations in northwest New Mexico and northeast Arizona, including the Navajo Towns of Fort Defiance and Window Rock, Arizona, the non-Navajo City of Gallup, New Mexico, plus 18 other small Navajo communities. Feasibility studies for this project were authorized by Congress

with P.L. 92-199, December 15, 1971. The purpose of the project is to provide a safe, reliable, and sustainable municipal and domestic water supply to replace or augment existing supplies and to provide water to areas of the Navajo Reservation which currently do not have a domestic water supply.

Alternatives to meet the project needs are currently being developed and evaluated. An alternative which appears to be feasible and has the support of the Navajo Nation and the City of Gallup is to divert about 31,900 afy from Navajo Reservoir to supply about 12,300 afy to 20 Navajo Nation communities, 7,500 afy to the City of Gallup, and 7,800 afy to the Navajo Agricultural Products Industry, with an estimated total depletion of about 28,000 afy. NEPA compliance activities are scheduled to be initiated in 2000 and completed late 2001. Preparation of a Biological Assessment is underway as a requirement for the Section 7 consultation process.

Even though the Navajo Nation has not completed its water rights negotiations with the State of New Mexico to quantify its reserved rights, and no specific state rights exist for this project, the water required for this project could be supplied under a contract with Reclamation from Navajo Dam by lease of other existing rights, or by acquisition of state rights or recognition of these rights as reserved rights. The project has been authorized for study, but not for construction. This required water is not included in the environmental baseline depletion used to analyze the impacts of the ALP Project. Therefore, a Biological Assessment and favorable Biological Opinion for the project would be required before the project could proceed.

4.2.5 Completion of the Navajo Hogback Project

In the 1991 Biological Assessment for Blocks 1-8 of the NIIP, a depletion right of 16,420 afy was transferred from the Hogback Project to NIIP to allow construction to proceed while the research to determine the flow requirements for endangered fish was completed. This water came from portions of the project that were inactive. Prior to activating the remainder of the project, this depletion would have to undergo Section 7 consultation.

4.2.6 Colorado Transportation Improvement Projects

Recent voter approval of State Referendum A affects three projects in southwestern Colorado. These include:

- Widening of U.S. Highway 550 (U.S. 550) from Durango to the New Mexico state line to four lanes, with construction completed in 2007;
- The addition of two lanes to U.S. Highway 160 (U.S. 160) from Colorado Highway 3 to the Florida River, with construction completed in 2005; and
- The reconstruction of U.S. 160 over Wolf Creek Pass, with construction completed in 2007.

Construction activities for Wolf Creek Pass reconstruction west of the City of Durango and U.S. 550 widening to the south of Durango are currently underway. The specific environmental impacts associated with these roadway improvement projects have not been identified. However, it can be expected that construction activities associated with these improvements would result in increased traffic volumes on nearby roadways due to construction vehicles and worker trips; potential traffic delays due to construction within and adjacent to roadways; localized riparian and possible wetland impacts due to roadway widening and other construction activities that may not completely avoid sensitive areas;

increased fugitive dust and other air pollutant emissions from construction equipment and ground disturbance; temporary degradation of water quality due to runoff from construction areas; and potential disturbance to cultural resources due to earthmoving activities during construction.

4.3 CUMULATIVE IMPACTS

The projects listed in Section 4.2 will have cumulative impacts when taken in conjunction with the completion of the ALP Project. The following sections describe the impacts by project.

4.3.1 Operation of Navajo Dam

The operation of Navajo Dam to meet the SJRBRIP flow recommendations provides the mechanism that allows project development to continue in the San Juan River Basin. In 1991, the status of endangered fish in the San Juan River stopped additional depletions in the river. The commitment to operate Navajo Dam to mimic a natural hydrograph allowed 57,100 afy of depletion associated with Phase 1, Stage A of the ALP Project to proceed. The subsequent flow recommendation issued by the SJRBRIP in 1999 set the requirement for water to meet the needs of endangered fish. Extensive hydrology modeling demonstrated that there was sufficient water in the basin to allow the 57,100 afy depletion for the ALP Project and an additional depletion amount in excess of 122,000 but less than 210,000 afy. A Biological Assessment has been concurred on by the Service for the use of 120,580 afy in the NIIP. The actual amount available would depend on the nature of the development and the reservoir operating rules employed.

While this operating scenario allowed for further development of water in the San Juan River Basin, it also set the limit of developable water at a level less than full entitlement under the Upper Colorado River Compact.

4.3.2 Navajo Indian Irrigation Project

The comletion of the NIIP will increase depletions on the San Juan River by about 120,580 afy under equilibrium conditions, and by about 137,580 afy until return flows reach equilibrium. The 1999 Biological Assessment and letter of concurrence from the Service allowed construction to proceed up to the full level of development, utilizing a large portion of the remaining developable water within the flow recommendation.

4.3.3 Future Indian Water Development

The completion of the ALP Project and NIIP, in conjunction with the requirement to meet the flow recommendations for endangered fish, limits the available water supply for future development. The Jicarilla Water Rights Settlement, the proposed Navajo-Gallup Project, and completion of the Hogback Project, have a total average depletion of about 69,800 afy. With the No Action Alternative, 20,000 afy of this demand can be met without changing operating rules for Navajo Dam. For Refined Alternative 4 with standard operation, 6,000 afy of the demand can be met. With operation of the Durango Pumping Plant to mitigate impacts by limiting pumping in dry years, as described in Section 3.2, 8,000 afy of the demand can be met without new operating rules. With Refined Alternative 6, there is no remaining water supply to meet these demands without new operating rules for Navajo Dam.

Since the flow recommendations may change in the future under adaptive management and modified operating rules may allow meeting the flow recommendations with less released water from Navajo Dam

by more efficient operation, the impacts above may be less in the future. Possible mitigation measures that could be implemented to reduce these cumulative impacts are discussed in Section 4.6 under Indian Trust Assets (ITAs).

4.3.4 Colorado Transportation Improvement Projects

Roadway improvements and associated potential environmental impacts discussed in Section 4.2.6 could result in cumulative impacts with the ALP Project if construction activities were to occur concurrently.

Increased traffic volumes resulting from construction haul trucks and worker trips during the construction of the ALP Project structural components could exacerbate traffic impacts associated with roadway improvement activities. This cumulative impact is not expected to be significant, however, as ALP Project mitigation will include traffic studies and modifications to worker and haul truck trip scheduling to reduce ALP Project traffic impacts. These traffic studies and recommended trip scheduling would consider the effects of other concurrent activities and would serve to reduce the potential for cumulative traffic-related impacts.

Potential riparian habitat impacts associated with roadway improvement projects could slightly reduce the amount of riparian habitat within the project area. Riparian habitat losses as a result of ALP Project construction would also slightly reduce the amount of riparian habitat within the project area. Riparian habitat impacts resulting from the ALP Project will be minimized through avoidance and restoration to the extent possible. The combined effect of these riparian losses is not considered significant; however, it is recognized that riparian habitat loss is a continuing trend as a result of development within the project area. The ALP Project would avoid or mitigate impacts to wetlands and, therefore, no cumulative wetlands impacts would result from the ALP Project s wetland impacts. In addition, it is expected that roadway improvement projects would avoid and mitigate riparian and wetland impacts to the extent possible.

Increased fugitive dust and other air pollutant emissions from construction equipment and ground disturbance would occur during construction of the ALP Project structural components and roadway improvement projects. Emissions would be short-term and localized and would only result in cumulative impacts if ALP Project construction activities were to occur within the same area and at the same time as roadway improvement projects. The potential for cumulative impacts could be reduced through scheduling construction activities to avoid simultaneous local activities and is not expected to be significant.

Potential water quality degradation as a result of ALP Project construction would be minimized through implementation of best management practices (BMPs) for controlling storm water runoff. It is expected that roadway improvement projects would implement similar techniques. However, the potential would exist for concurrent construction activities to result in significant cumulative temporary water quality impacts. This potential impact could be avoided through construction scheduling to limit concurrent construction.

Disturbance to cultural resources would occur as a result of the development of ALP Project structural components. The potential would also exist for disturbance to cultural resources due to earthmoving activities during construction of roadway improvement projects. It is expected that avoidance, survey, and treatment techniques similar to those that would be implemented during ALP Project construction will also be employed during roadway improvement construction. However, disturbance of cultural resources within the project area would remain an unavoidable cumulative impact.

4.4 RELATIONSHIP BETWEEN SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

4.4.1 Introduction

This section discusses the short-term use of man's environment that would be required to construct and implement project alternatives and the long-term productivity that would result from operation of the project.

Short-term use of man's environment refers to either the actual use of resources during construction (e.g., energy, manpower, and monetary investment) or impacts to environmental resources that would occur during construction or as a result of operation (as discussed in Chapter 3). Long-term productivity refers to the benefits that would be realized during operation of the project, including the Colorado Ute Tribes and non-Colorado Ute Tribes water end uses. In most instances, short-term use of (or impacts to) a given resource would not have a directly corresponding long-term benefit to that resource. Additionally, certain long-term adverse impacts would occur to some resources. These impacts are discussed in detail in Chapter 3.

The following sections discuss: (1) the long-term productivity that would result from the operation of Refined Alternative 4 and Refined Alternative 6, and (2) the short-term use of resources that would be required to realize such productivity.

4.4.2 Long-term Benefits and Productivity

Long-term benefits that would be realized from implementation of Refined Alternative 4 include (1) satisfying the Colorado Ute Indian Water Rights Settlement Act (Settlement Act), (2) provision of M&I water to the Colorado Ute Tribes and other entities within Colorado and New Mexico, (3) increased development and employment opportunities and associated revenues to the Colorado Ute Tribes and other area residents and businesses as a result of water deliveries, and (4) the creation of additional recreational opportunities within La Plata County.

Long-term benefits that would be realized from implementation of Refined Alternative 6 would be the same as those identified above, with the exception of increased recreational opportunities associated with Ridges Basin Reservoir, as this component would not be developed.

4.4.3 Short-term Use of Resources

Resources that would be required for construction and operation of Refined Alternative 4 and the water end uses and conveyance systems would include construction materials, energy, land, manpower and monetary expenditure. Specific project requirements for both construction and operation are described in Chapter 2, Development of Alternatives. Additionally, commitments of certain resources would result from impacts that would occur during construction and operation of the structural components and water end uses and conveyance systems, as well as implementation of the non-structural components (i.e., the purchase of irrigated agricultural lands and either the conversion of some of those lands to non-irrigated agriculture or taking the land out of agricultural production). These commitments, or impacts, would indirectly allow for the long-term benefits of the project, as discussed in the Section 4.5. Such commitments include reduced agricultural productivity, reduced winter range habitat for big game wildlife, disturbance or inundation of cultural resources, destruction of wetlands, reduced commercial

rafting on the Animas River south of Durango, and increased traffic congestion associated with construction traffic and recreation activities at Ridges Basin Reservoir.

Resources required for construction and operation of Refined Alternative 6 would differ from those of Refined Alternative 4. Construction of the structural components of Refined Alternative 6 would require fewer construction materials, energy, land, manpower and monetary expenditures. However, the non-structural component of this alternative would require increased irrigated agricultural land acquisition and, as such, this component would be more costly than the non-structural component of Refined Alternative 4. End uses of each alternative would require similar uses of resources. However, the distribution systems of Refined Alternative 6 would be less extensive (due to increased in-stream conveyance under this alternative) and, therefore, would require fewer resources to construct and operate. Commitments of resources associated with resource impacts under Refined Alternative 6 would generally be less extensive than Refined Alternative 4. However, impacts associated with conversion of irrigated agricultural lands would be greater under Refined Alternative 6 due to the increased requirement of agricultural land acquisition that would be necessary.

4.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The irreversible and irretrievable commitments of certain resources would be required to implement the ALP Project. Irreversible and irretrievable commitments would occur from the use of resources for the construction and operation of the structural components and land acquisition and management changes under the non-structural components, and would also occur through impacts to resources as a result of implementation of the project alternatives.

For the purposes of this section, the irreversible commitment of a renewable resource means that following the decision to take certain actions which would result in the utilization or loss of a given resource (in part or in whole), either the decision could not be changed or the action could not practicably be reversed due to physical or economical constraints. The irretrievable commitment of a resource is defined as the loss of future options and/or a given resource. Consequently, a resource used for either the construction and/or operation of the project (as identified in Chapter 2) would be an irretrievable commitment of a resource. Additionally, the loss of a resource resulting from project impacts, such as reduced agricultural productivity, reduced winter range habitat for big game wildlife, disturbance or inundation of cultural resources, destruction of wetlands, reduced commercial rafting on the Animas River south of Durango, or increased traffic congestion associated with construction traffic and recreation activities at Ridges Basin Reservoir, would be considered an irretrievable commitment of that resource. For example, once water is diverted from a river and put to a particular use, it cannot feasibly be retrieved and, as such, would be considered an *irretrievable* commitment of that resource. However, the decision and physical action to divert the water is not *irreversible*. If policy, legislative, or management decisions were made to end the diversion of water to a particular use, then diversion facilities could be reconfigured accordingly, and the commitment of the water to that use would be reversed.

Resources that would be used for the construction and operation of the project alternatives structural components and end uses and conveyance systems include: construction materials; energy resources such as fuel for construction equipment; manpower for construction and operation; and financial resources. Additionally, the operation of potential end uses of project water would, by definition, consume water and would also consume other resources such as coal and natural gas (in the case of the power plants that

could be constructed). The project alternatives non-structural components of Refined Alternative 4 and Refined Alternative 6 would require the commitment of irrigation water to other uses and would result in the commitment of taking currently irrigated agricultural lands out of production or converting their use to dry-farmed production.

The decision to commit resources for the construction of the structural components would be irreversible once construction activities had taken place. The energy, manpower, and other resources that would be used for development of the project facilities would be forgone following construction of the facilities and reusing these resources for alternative purposes would not be feasible.

The decision to commit water to a particular use, however, would be reversible. Currently, there has been no commitment by the Colorado Ute Tribes to put project water to a particular use. Following implementation of the project and the availability of project water, the Colorado Ute Tribes would likely develop end uses for the water or make the water available through lease or sale for non-Tribal developers use. While the water consumed from these uses could not feasibly be retrieved, the decision to commit this water to a particular purpose could be reversed. It is possible that within this time span economic circumstances could arise or technical advances occur which would influence decision makers to alter the operational specifications of particular projects, thereby changing the resources necessary for operation or creating an opportunity to put such water to a more beneficial use. These decisions could result in a reduction or elimination of the further consumption, thereby reversing their commitment.

4.6 ENVIRONMENTAL JUSTICE AND INDIAN TRUST ASSETS

4.6.1 Indian Trust Assets

The United States has a trust responsibility to protect and maintain rights reserved by or granted to American Indian tribes or by Indian individuals by treaty, statutes and executive orders. This trust responsibility requires that agencies such as Reclamation take actions reasonably necessary to protect ITAs. The Reclamation ITA policy states that Reclamation will carry on its activities in a manner which protects ITAs and avoids adverse impacts when possible. When Reclamation cannot avoid adverse impacts, it will provide appropriate mitigation or compensation. Definition of terms used in this analysis are:

- ITAs are legal interests in assets held in trust by the federal government for federally recognized Indian tribes or individual Indians.
- Assets are anything owned that has monetary value. The assets need not be owned outright, but could be some other type of property interest, such as a lease or a right to use something. Assets can be real property, physical assets, or intangible property rights.
- A trust has three components: the trustee, the beneficiary, and the trust asset(s). The beneficiary also is referred to as the beneficial owner of the trust assets. In this trust relationship, title to ITAs is held by the United States (trustee) for the benefit of an Indian tribe or Indian individuals (beneficiary).
- ITAs cannot be sold, leased, or otherwise alienated without the United States approval. While most ITAs are located on the reservation, they also can be located off-reservation. Examples of things that could be ITAs include lands, minerals, water rights, hunting and fishing rights, other

natural resources, money, or claims. In addition, Native American Grave Protection and Repatriation Act (NAGPRA) cultural items and other cultural property may be considered ITAs.

- Legal interest means there is a property interest for which a legal remedy, such as compensation or injunction, may be obtained if there is improper interference. ITAs do not include things in which a tribe or individuals have no legal interest. For example, off-reservation sacred sites in which a tribe has no legal property interest are generally not considered ITAs. These and other tribal cultural interests (such as cultural property covered under NAGPRA) are discussed in Chapter 3, Section 3.9.

Using the above definitions, ITAs have been identified for the federally recognized tribes within the Upper San Juan River, including: Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Jicarilla Apache Tribe, and Navajo Nation. ITAs were examined in the 1996 FSFES. Because the affected environment for several ITAs has changed little since the writing of that document, information from that report is used where appropriate, and updated as necessary.

Five types of ITAs that would potentially be impacted by the project are examined in this document and include water rights, trust lands, mineral rights, hunting and fishing rights, and cultural resources on trust lands. The four tribes are examined independently, with the exception that the Southern Ute Indian and Ute Mountain Ute Tribes are combined under the heading Colorado Ute Tribes. Cultural resource issues and mitigation, including sacred sites and NAGPRA issues, are addressed in Chapter 3, Section 3.9 of this document.

4.6.2 Environmental Justice

Environmental Justice issues were identified and reviewed simultaneously with the review of ITAs. Executive Order 12898, dated February 11, 1994, established the requirement to address Environmental Justice concerns within the context of agency operations.

> *To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.*

As part of the NEPA process, agencies are required to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income communities. The Executive Order on Environmental Justice requires that the responsibilities set forth shall apply equally to Native American programs. Therefore, when minority and low-income populations are discussed, Indian populations may also be included. Six general principles for Environmental Justice under NEPA include:

- Identify minority and low-income populations in the area affected by the project;

- Consider relevant public health data and industry data regarding potential multiple and cumulative exposure of minority and low-income populations to human health or environmental hazards;

- Recognize interrelated cultural, social, occupational, historical, or economic factors that could amplify environmental effects of the project;
- Develop effective public participation strategies that overcome linguistic, cultural, institutional, geographic and other barriers;
- Assure meaningful community representation in the process; and
- Seek tribal representation consistent with the government-to-government relationship between the United States and tribal governments (Council on Environmental Quality 1997).

Whereas ITAs deal primarily with Indian lands and natural resources, Environmental Justice includes any adverse affect on minority and low-income populations in the analysis area and may include Indian populations as well. Key indicators reviewed for Environmental Justice include income, poverty rates, and the minority population within a community. Because the ALP Project is a water resource project, E\environmental Justice also included a review of the availability of domestic water to minority and low-income households.

Environmental Justice concerns were evaluated for the Colorado Ute Tribes, the Navajo Nation, and Jicarilla Apache Tribe. In addition, other tribes with cultural resource ties to the project area were also included in the evaluation.

4.6.3 Affected Environment

4.6.3.1 Colorado Ute Tribes

Because the water allocated under the project would potentially result in reservation-wide impacts, ITAs were identified reservation-wide for both Colorado Ute Tribes. ITAs in this analysis area include water rights, trust lands, mineral resources, and hunting and fishing rights. Potentially impacted cultural resources, including burial sites covered under NAGPRA, sacred sites, and ethnography, are discussed in Chapter 3, Section 3.9.

4.6.3.2 Navajo Nation

The receipt of a water allocation from the ALP Project, and the construction of a new pipeline to transport the water, are the Navajo Nation s direct link to the project. ITAs in the project area include, but may not be limited to, water, land, mineral resources, and fishing and hunting rights.

The Navajo Nation has other water interests in the San Juan River Basin separate from the ALP Project. The San Juan River is a major source of water for agricultural and domestic use on the Navajo Nation. Water in the basin is also used for mineral development such as Navajo Mine. Navajo Reservoir is the principal water storage facility for the Navajo Nation in the San Juan River Basin. The affected environment for this issue includes the area served by the Navajo Nation Municipal Pipeline (NNMP) and much of the eastern portion of the Navajo Nation where adequate domestic water service is lacking. The Navajo Nation s proposed water use associated with M&I development is also considered an Environmental Justice issue.

4.6.3.3 Jicarilla Apache Tribe

The Jicarilla Apache Indian Reservation begins approximately 15 miles east of Navajo Reservoir. The reservation is located in western Rio Arriba County and northwestern Sandoval County in New Mexico. Because the Jicarilla Apache Tribe trust lands do not occur in areas proposed for structural or non-structural elements under the project, the tribe s ITAs potentially affected by the ALP Project are limited to water. The Jicarilla Apache Tribe s water rights are also considered an Environmental Justice issue.

4.6.3.4 Other Native American Tribes

As part of the traditional cultural property consultation process, and reviewed here for Environmental Justice concerns, the following Native American groups were contacted:

- Hopi Tribe
- Pueblos of Acoma, Cochiti, Isleta, Jemez, Laguna, Nambé, Picuris, Pojoaque, San Filipe, San Ildefonso, San Juan, Sandia, Santa Ana, Santa Clara, Santo Domingo, Taos, Tesuque, Zia, and Zuni
- San Juan Southern Piute
- Uintah-Ouray Ute Tribe

Issues addressed included traditional cultural properties eligible for inclusion as sites on the National Register of Historic Places (NRHP) under the National Historic Preservation Act (NHPA), sacred sites defined under the American Indian Religious Freedom Act (AIRFA), and human remains and funerary objects covered under NAGPRA. These issues, and any mitigation measures, are discussed in Chapter 3, Section 3.9.

4.6.3.5 Affected Environment - Water

4.6.3.5.1 Colorado Ute Tribes

In Winters v. United States, the Supreme Court laid the foundation for Indian water rights which have become known as Winters Doctrine rights. The Court held that when land was withdrawn and reserved from the public domain for Indian reservations, enough water to fulfill the purposes of that reservation was implicitly reserved. This right was given a priority date of the time when the reservation was established and, unlike state water rights, the right is not measured by the criterion of beneficial use and cannot be lost through non-use.

Under the Winters Doctrine, the Colorado Ute Tribes claim a priority appropriation right of 1868, when the Colorado Ute Tribes entered into a treaty with the United States. These rights were quantified under the Colorado Ute Indian Water Rights Settlement Agreement (Settlement Agreement) as discussed in Chapter 1. In the Settlement Agreement, the Colorado Ute Tribes accepted ALP Project reserved water rights to satisfy a portion of their Winters Doctrine water rights claims. The Settlement Agreement specifies:

> *This project reserved water right shall have an 1868 priority date, shall be subordinated to all water rights decreed and senior to the Animas-La Plata Project, and shall share*

on a pro rate basis the priority of the Animas-La Plata Project, which has an adjudication date of March 21, 1966, and an appropriation date of September 2, 1938, C.A. 1751-B, District Court, La Plata County, Colorado.[1]

The Settlement Agreement protects the non-Indian water users with priority dates that would have been superseded by the Colorado Ute Tribes water right with an 1868 priority date. In exchange for this concession, the Colorado Ute Tribes were promised that facilities would be built by January 1, 2000, to enable storage and delivery of ALP Project water. If water is not available for use by the Colorado Ute Tribes by January 1, 2000, the Tribes may take one of the following actions within the following five years and in consultation with the United States as trustee: (1) retain the project water rights; or (b) commence litigation or renegotiation of their pending reserved water rights claims on the Animas and La Plata Rivers.

The Colorado Ute Tribes water rights were quantified under the Settlement Agreement (see Table 1-1 in Chapter 1). This included 29,900 afy (26,500 afy of M&I water and 3,400 afy of agricultural irrigation water) from the ALP Project for the Southern Ute Indian Tribe, and 32,300 afy (6,000 afy of M&I water and 26,300 afy of agricultural irrigation water) from the ALP Project for the Ute Mountain Ute Tribe.

Approximately 11,000 acres of reservation farmland are currently irrigated on the Southern Ute Indian Reservation. Several irrigation projects throughout the Reservation currently use water defined in the Settlement Agreement. Currently, the Southern Ute Indian Tribe owns the beneficial rights for 181.7 cfs as part of the PRIIP, which is sufficient to serve 14,536 acres of Tribal and allotted lands. In addition to flow rights, the Southern Ute Indian Tribe also receives a one-sixth share of the stored water in Vallecito Reservoir to supplement natural flow rights in the Pine River. In 1963, the Southern Ute Indian Tribe obtained use of 1,819 afy of water to irrigate 714 acres of tribal land through a contract with Reclamation and the Florida Water Conservancy District. An additional 181 afy of PRIIP water to irrigate an additional 71 acres was obtained through a recent amendment. The tribe also owns capital stock in four private ditch companies in the Pine River Valley (Pine River-Bayfield, Schroeder Ditch Company, Thompson-Epperson, and King Ditch). The tribe also has approximately 100 acres of land under irrigation from the Animas Citizens Ditch; 60 to 70 acres from the ME&M Ditch (Piedra River); and 140 acres from the Carr Ditch (San Juan River).

The Ute Mountain Ute Tribe currently receives most of its irrigation water from the Dolores Project and the Mancos Rivers. The Ute Mountain Ute Farm & Ranch Enterprise manages the largest farming efforts. This irrigated agricultural project is designed to manage 7,634 acres. Currently, 5,300 acres are in production and 2,334 acres are undeveloped (Ute Mountain Ute Tribe 1999).

4.6.3.5.2 Navajo Nation

The Navajo Nation has substantial quantities of water resource ITAs in the San Juan River Basin based on historic agreements. Because the reservation borders the San Juan River, the Navajo Nation has Winters Doctrine rights (rights based on the 1908 Supreme Court Decision *Winters v. United States*, 207 U.S. 564) on this river. The San Juan River, with water storage in Navajo Reservoir, is the only reliable and readily developable source in the northern portion of the Navajo Nation. Water rights in the San Juan River Basin have been adjudicated. However, the Navajo Nation rights have not been quantified. Use of water on the Navajo Nation now has a baseline depletion of 301,499 afy for the following projects: 280,600 afy for the NIIP, 12,100 afy for the Hogback Project, 7,898 afy for the Fruitland

[1]Colorado Ute Indian Water Rights Final Settlement Agreement, December 10, 1986, p 15.

Irrigation Project, and 900 afy for the Cudei Irrigation Project (Keller-Bliesner Engineering and Ecosystems Research Institute Inc. 1999). The Service concurred with a 1999 Biological Assessment prepared by the BIA regarding increased NIIP depletions, which will increase by about 120,580 afy on average under equilibrium conditions and be about 131,180 afy on average until return flows reach equilibrium.

The 1999 Biological Opinion retained 16,420 afy depletion transferred from the Hogback Project. Completion of the Hogback Project will require restoration of this water.

Under the ALP Project, the Navajo Nation is to receive 2,340 afy depletion of water under a diversion of 4,680 afy. This will be an important ITA water resource for the Navajo Nation. Water delivered through the pipeline would help the Navajo Tribal Utility Authority serve more than 10,000 people currently residing in the Shiprock area (Navajo Nation Water Management Branch 1998).

An Environmental Justice concern is the inadequate drinking water supply on portions of the Navajo Nation. More than 40 percent of Navajo Nation families haul water from windmills and springs that do not meet federal water quality standards for domestic water needs (Reclamation n.d.). Twenty Navajo Nation communities in the project area depend on groundwater that is dwindling in supply and of marginal quality. The proposed Navajo-Gallup Project would be a means to provide water for households that do not currently have a domestic water supply or are dependent on inadequate groundwater supplies. San Juan River water would be obtained from Navajo Reservoir. A total annual diversion of 31,900 afy would be required with an associated depletion of about 28,000 afy (Reclamation 1998). The Navajo Nation and City of Gallup signed a Memorandum of Agreement (MOA) on April 17, 1998 to proceed with project planning and resolve issues related to project development.

The full Navajo Nation reserved right discussed above has not been quantified. The listing of actual or proposed uses may form a portion of their total reserved rights when quantified, but are not all inclusive. However, since these additional rights are not quantified, impacts to them cannot be assessed.

4.6.3.5.3 Jicarilla Apache Tribe

The Jicarilla Apache Tribe established legal rights to San Juan River Basin water that are based on the Jicarilla Apache Tribe Water Rights Settlement Act of 1992 (106 STAT. 2237) as follows: (1) 2,195 afy historic depletion, (2) 2,187 afy stock pond and reservoir evaporation, (2) 25,500 afy depletion from Navajo Reservoir or River and (3) 6,500 afy depletion from the San Juan-Chama Project. These rights were affirmed and decreed by the Eleventh Judicial District Court, County of San Juan, State of New Mexico on February 23, 1999 in a Partial Final Judgement and Decree.

With the passage of the Jicarilla Apache Water Rights Settlement Act of 1992 and the subsequent decree by state court, all of the water rights provided to the Jicarilla Apache Tribe will now have to be addressed in future allocations of water in the San Juan River Basin, qualifying them as ITAs.

4.6.3.6 Affected Environment - Trust Lands

4.6.3.6.1 Colorado Ute Tribes

The Southern Ute Indian Tribe Land Consolidation Act was passed in December 22, 1969. This act enabled the tribe to purchase or sell land within the reservation boundary in order to consolidate its holdings, with the land purchased being able to be placed into trust status. Currently, the exterior

reservation boundary encompasses slightly more than 681,000 acres, with ownership as shown in **Table 4-1**.

Because of the scattered land ownership pattern on the Southern Ute Indian Reservation, many Tribal tracts are too small for efficient use and remain idle, or are subject to trespass. As of 1998, the Southern Ute Tribal Council had assigned approximately 19,000 acres of Tribal trust land to more than 240 individual tribal members for personal use. Approximately 75 percent of these assigned parcels lie within the Pine River corridor, with the reminder scattered in outlying areas (Southern Ute Indian Tribe 1999).

Table 4-1
Southern Ute Indian Tribal Lands

Status/Ownership	Colorado County Acreage Within Exterior Boundary			Total
	La Plata	Archuleta	Montezuma	
Tribal Undivided Trust	175,544	131,209	1,085	307,838
Allotted Undivided Trust	3,582	150	0	3,732
Joint Tribal/Allottee Trust	560	160	0	720
Tribal Purchases in Fee Status	220	560	0	780
U.S. Bureau of Indian Affairs	12	0	0	12
U.S. Forest Service	10,460	46,120	0	56,580
U.S. Bureau of Reclamation	0	4,875	0	4,875
Fee Simple	233,267	71,885	1,617	306,769
Total	**423,645**	**254,959**	**2,702**	**681,306**

Source: Southern Ute Indian Tribe (1999)

The Ute Mountain Ute Reservation consists of 582,322 acres, including 541,209 acres of trust lands and 41,112 acres of fee lands. The majority of lands are located in Montezuma County, Colorado, and San Juan County, New Mexico, with the remainder located in Gunnison and La Plata Counties, Colorado, and San Juan County, Utah. **Table 4-2** shows a further breakdown of reservation lands.

Table 4-2
Ute Mountain Ute Lands

Status/Ownership	State and County Acreage					Total
	Colorado			New Mexico	Utah	
	Gunnison	La Plata	Montezuma	San Juan	San Juan	
Tribal Trust			431,910	104,964	40	536,914
Individual Allotments					4,295	4,295
Fee Lands	18,909	16,119	4,402		1,682	41,112
Total	**18,909**	**16,119**	**436,312**	**104,964**	**6,017**	**582,321**

Source: Ute Mountain Ute Tribe (1998)

4.6.3.6.2 Navajo Nation

ITAs consisting of Navajo Nation trust lands occur along the NNMP route (see Map 2-7 in Chapter 2). The lands are part of the Cudei, Hogback, Nenahnezad, and Upper Fruitland Chapters. Lands along the NNMP are best suited for growing alfalfa and grains (Keller-Bliesner Engineering 1991). Farmers cultivate small parcels along the pipeline route under permit from the BIA and approval by the Navajo Nation Farm Board. Most farmers produce corn, alfalfa, and melons under irrigation. Livestock is limited to small herds (up to 10 head) of horses and cattle.

Land uses near the pipeline corridor will require Environmental Justice consideration when planning construction of the NNMP. Residences occur at four locations within 100 feet of the pipeline corridor. A school and a cemetery also occur within 100 feet of the pipeline corridor.

4.6.3.7 Affected Environment - Mineral Resources

4.6.3.7.1 Colorado Ute Tribes

Portions of both Colorado Ute Tribe Reservations lie in the northern part of the San Juan River Basin, which contains large reserves of coal, oil, and gas, and is the location of operating coal mines and oil and gas wells. The Southern Ute Indian Tribe is currently producing coal bed methane gas, while the Ute Mountain Ute Tribe is producing oil and conventional gas. The gas production of both Tribes is tied to a national gas pipeline network. Both Tribes expect their gas production to decline over the long run (Ute Mountain Ute Tribe 1998).

The Southern Ute Indian Reservation overlies about 16 billion tons of Furitland Formation coal, about 500 million tons of which lie within 500 feet of the surface. Just south of the Southern Ute Indian Reservation, the La Plata Mine produces coal for the San Juan Power Plant near Farmington, New Mexico. The Ute Mountain Ute Reservation overlies Fruitland Formation coal deposits as well. Approximately 14.4 million tons of coal are considered attractive for strip mining, but this deposit is thought to be too small to be mined separately.

4.6.3.7.2 Navajo Nation

The Navajo Nation has ITA mineral resources in the vicinity of the NNMP (see Map 2-7 in Chapter 2). Such resources include coal, sand and gravel, and oil and gas. None of these resources are currently being extracted along the pipeline route. Nevertheless, oil and gas wells owned by the Navajo Nation occur in the San Juan River Valley near the pipeline route and upland areas to the north and south of the pipeline route. Because of the alluvial valley location of the pipeline route, sand and gravel occurs along the pipeline route. Sand and gravel is being extracted elsewhere along the San Juan River. Privately owned natural gas pipelines cross the pipeline corridor at five locations. The pipelines do not qualify as ITAs, but would require consideration during pipeline construction. Coal mining occurs at Navajo Mine, operated by BHP Minerals, approximately one to two miles south of the pipeline, near Fruitland. The Navajo Nation receives royalties from the coal sales.

4.6.3.8 Affected Environment - Hunting Rights

4.6.3.8.1 Colorado Ute Tribes

Under the 1874 Brunot Agreement (43 Stat. 36), also known as the San Juan Cession, the Colorado Ute Tribes gave up their claim to the San Juan Mountains, along with approximately one-third of the present-day western Colorado. However, the Tribes were permitted to hunt within their old Reservation boundaries, which include the Ridges Basin area. While the Southern Ute Indian Tribe is not currently practicing its reserved hunting rights under the Brunot Treaty, members of the Ute Mountain Ute Tribe are (Terence Stroh, Southern Ute Indian Tribe).

4.6.4 Environmental Consequences

4.6.4.1 Indian Trust Assets - Significance Criteria

An action that would impact the value, use, or enjoyment of an ITA is considered significant. For example, actions that result in the interference with the exercise of a reserved water right or in the degradation of water quality where there is a water right, reduce the value or alter the use of tribal lands, impact fish or wildlife where there is a hunting or fishing right, or impact cultural resources on trust lands, would be considered significant negative impacts.

4.6.4.2 Environmental Justice - Significance Criteria

An action that creates disproportionately high and adverse human health and environmental effects on minority or low-income populations would be considered significant. In addition, an action would be considered significant if it reduced available water supplies for any low-income, minority, or Indian populations.

4.6.4.3 Impact Analysis

The following sections discuss potential impacts to ITAs and Environmental Justice of Refined Alternative 4, Refined Alternative 6, and the No Action Alternative. In addition, mitigation measures are proposed to reduce or eliminate potential significant impacts.

4.6.4.3.1 Refined Alternative 4

Indian Trust Assets

Refined Alternative 4 Impact 1 - Potentially Significant: Refined Alternative 4 does not meet the terms and conditions of the Settlement Agreement for the Colorado Ute Tribes.

Refined Alternative 4 would provide storage for a portion of the Colorado Ute Tribes assured water rights. However, the 39,960 afy of allowed depletion for the Colorado Ute Tribes is 13,240 afy less than that identified in the Settlement Agreement. Also, all water provided under Refined Alternative 4 must be used for M&I purposes, while the Settlement Agreement specified that 3,400 afy of depletion be used for irrigation purposes by the Southern Ute Indian Tribe, and 26,300 afy be used for irrigation purposes by the Ute Mountain Ute Tribe. Because of the reduced amount of depletion, and the lack of irrigation water, the terms of the Settlement Agreement would not be met under Refined Alternative 4.

However, Refined Alternative 4 would provide the Colorado Ute Indian Tribes a means to purchase approximately 13,000 afy through the use of a $40 million water acquisition fund. This amount could be used to acquire private water rights on a willing buyer/willing seller basis. These funds could also be redirected for on-farm development, water delivery infrastructure, or other economic development uses.

Mitigation for Refined Alternative 4 Impact 1: Seek modification of Settlement Agreement.

Refined Alternative 4 would meet the Settlement Agreement if the Colorado Ute Settlement Act Amendments of 1999 (HR 3112), or any other bill or legislation, were enacted by Congress that would legally demonstrate that the terms and conditions of Refined Alternative 4 satisfy the Colorado Ute Tribal water rights. This legislation has been introduced by non-federal parties, and if enacted, could satisfy this mitigation requirement.

Refined Alternative 4 Impact 2 - Significant: Refined Alternative 4 limits the water supply available for the development of the proposed Navajo-Gallup Project designed to deliver drinking water to portions of the Navajo Nation with limited or no supply.

The development of Refined Alternative 4 reduces the water available for future uses out of Navajo Reservoir to 6,000 afy, a reduction of 14,000 afy (see Section 3.2). This represents only about 22 percent of the project demands. This limited supply also affects the potential supply for the Jicarilla Apache water rights and the completion of the Hogback Project.

The 2,340 afy depletion provided under the ALP Project would only satisfy a portion of the water needs of the Navajo Nation. The new NNMP would help meet current water demands in the Shiprock area.

Mitigation for Refined Alternative 4 Impact 2: The following mitigation elements are possible:

- The Durango Pumping Plant would be operated to limit pumping during dry years, allowing more water to be available in Navajo Reservoir to meet project demands (see Section 3.2). With this operation, an additional 2,000 afy of depletion would be available for the proposed Navajo-Gallup Project. This would increase the supply to 29 percent of demand.

- Operating Rules for Navajo Dam would be optimized to provide more efficient delivery of the flow recommendations for endangered fish, allowing more developable water for the proposed Navajo-Gallup Project.

- Reclamation would work with the Navajo Nation and the City of Gallup to continue development of the Navajo-Gallup Project.

The following mitigation measures may affect the ability of the Navajo-Gallup Project to go forward, but are beyond the control of Reclamation as a part of the ALP Project:

- An alternate project design that would take water from the San Juan River below its confluence with the Animas River would increase the potential yield for the project while protecting flows for endangered fish. In this case, releases from Navajo Dam would be supplemental to river flows, leveraging the limited storage volume available and making use of times when there are flows in excess of fish needs in the river.

- The Navajo-Gallup Project could be modified to reduce demands.

- The Navajo Nation could elect to utilize a portion of the NIIP allocation to meet these needs.

Refined Alternative 4 Impact 3 - Significant: Refined Alternative 4 reduces the water supply available for the Jicarilla Apache Tribe water rights in the San Juan River.

Refined Alternative 4 reduces the supply available to meet the water rights of the Jicarilla Apache Tribe. This impact is cumulative with the impacts to the water supply for the proposed Navajo-Gallup Project. Taken together, the available supply for both uses is 6,000 afy, for an impact of 14,000 afy (see Section 3.2 for details).

Mitigation for Refined Alternative 4 Impact 3: The following mitigation elements are possible:

- The Durango Pumping Plant would be operated to limit pumping during dry years, allowing more water to be available in Navajo Reservoir to meet project demands (see Section 3.2). With this operation, an additional 2,000 afy of depletion would be available to meet Jicarilla Apache Tribe and/or proposed Navajo-Gallup Project needs.

- Operating Rules for Navajo Dam would be optimized to provide more efficient delivery of the flow recommendations for endangered fish, allowing more developable water for the Jicarilla Apache Tribe and the proposed Navajo-Gallup Project needs.

- Reclamation will facilitate discussions between the Jicarilla Apache Tribe and other parties with interests in the San Juan River Basin. Interested parties will include, but not be limited to, the Colorado Ute Tribes, Navajo Nation, the Service, and private parties with existing contracts from Navajo Reservoir. Discussions will aim to develop options for obtaining the 25,500 afy depletion from Navajo River or Reservoir, which is authorized under the Jicarilla Apache Tribe Water Rights Settlement Act.

Refined Alternative 4 Impact 4 - Significant: Refined Alternative 4 reduces the water supply available for completion of the Hogback Project in the San Juan River.

Refined Alternative 4 reduces the water supply available to complete the Hogback Project. This impact is cumulative with the impacts to the water supply for the proposed Navajo-Gallup Project and the Jicarilla Apache Tribe. Taken together, the available supply for these uses is 8,000 afy, for an impact of 14,000 afy (see Section 3.2).

Mitigation for Refined Alternative 4 Impact 4: The following mitigation elements are possible:

- The Durango Pumping Plant would be operated to limit pumping during dry years, allowing more water to be available in Navajo Reservoir to meet project demands (see Section 3.2). With this operation, an additional 2,000 afy of depletion would be available to meet Jicarilla Apache Tribe, proposed Navajo-Gallup Project, and Hogback Project completion needs.

- Operating Rules for Navajo Dam would be optimized to provide more efficient delivery of the flow recommendations for endangered fish, allowing more developable water for the Jicarilla Apache Tribe, the proposed Navajo-Gallup Project, and Hogback Project completion needs.

- Reclamation will facilitate discussions between the Navajo Nation and other parties with interests in the San Juan River Basin. Interested parties will include, but not be limited to, the

Service and private parties with existing contracts from Navajo Reservoir. Discussions will aim to develop options for obtaining the 16,420 afy depletion from the San Juan River.

The following mitigation measures may affect the ability of the Hogback Project to be completed, but are beyond the control of Reclamation as a part of the ALP Project:

- Private rights could be acquired to meet these needs.
- The project could be modified to reduce demands.
- The Navajo Nation could elect to utilize a portion of the NIIP allocation to meet these needs.

Refined Alternative 4 Impact 5 - Potentially Positive: Land purchased with funds could potentially become trust lands.

If land is purchased with associated water rights using the water acquisition fund, such land has the potential to remain as fee land or to be taken into trust. That process may result in the Tribes needing to conduct an analysis of the impact, under NEPA, to local non-Indian communities, and provide means to mitigate impacts such as taxation and regulation of trust lands.

Mitigation for Refined Alternative 4 Impact 5: No mitigation required.

Refined Alternative 4 Impact 6 - Potentially Significant: Sections of the conveyance structures proposed under the non-binding water use scenarios would cut across Colorado Ute Tribal lands, potentially impacting the use of such lands. Relocation of natural gas pipeline(s) may also impact Tribal lands.

Certain sections of the non-binding conveyance structures cut across the Colorado Ute Indian Reservation. Construction of these laterals may result in negative impacts to farmlands, homes, or various other structures in the right-of-way. Natural gas pipelines within Ridges Basin may need to be relocated across Southern Ute Indian Reservation, potentially impacting such lands.

Mitigation for Refined Alternative 4 Impact 6: Routing of pipelines to avoid impacts and restoration of lands to their original conditions.

Any homes or other structures on Indian lands would be avoided by routing of the conveyance pipelines. Any Tribal lands disturbed by construction of the conveyance structures would be restored to their original condition. Land would be regraded to the original contour. If croplands are impacted, farmers would receive financial compensation for any crop losses.

Refined Alternative 4 Impact 7 - Less Than Significant: Disturbance during construction of NNMP may affect crop production.

During construction, land would be disturbed along the NNMP corridor. Cropland would be affected. If construction activities occur during the crop production season, cropland in some locations could be taken out of production for a single season, and crops in production could be damaged. Any lands disturbed by construction of the NNMP would be restored to their original condition. Land would be regraded to the original contour. Cropland topsoil would be stockpiled during construction and replaced on cropfields at the completion of construction. As much as possible, construction would occur during

periods when crops are not cultivated. Farmers would receive financial compensation for any crop losses.

Mitigation for Refined Alternative 4 Impact 7: No mitigation is proposed.

Refined Alternative 4 Impact 8 - Positive: Project water could allow the Colorado Ute Tribes to further develop their mineral resources.

One non-binding water use scenario considered by the Southern Ute Indian Tribe involves opening a coal mine and building a coal-fired power plant, while the Ute Mountain Ute Tribe is considering building a gas-fired power plant. This would allow the Colorado Ute Tribes to develop their coal and natural gas reserves on the reservation, resulting in an economic benefit to the Tribes by providing increased jobs and revenue.

Refined Alternative 4 Impact 8 - Less than Significant: The construction of the NNMP may affect Navajo Nation ITA mineral resources.

Oil and gas wells, sand and gravel, and coal resources occur near the NNMP. Existing oil and gas well, sand and gravel, and coal mining operations would not be affected, but in the future, the opportunity to extract these resources could be limited to the presence of the pipeline.

Mitigation for Refined Alternative 4 Impact 8: No mitigation is proposed.

Refined Alternative 4 Impact 9 - Less than Significant: Project development could negatively impact the Colorado Ute Tribes hunting and fishing rights.

Any project development that would negatively impact hunting and fishing resources, or access to such resources, within the Colorado Ute Indian Reservations prior to the Brunot Agreement (roughly, the western one-third of Colorado), would negatively affect the Tribes hunting and fishing rights.

Mitigation for Refined Alternative 4 Impact 9: No mitigation is proposed.

Environmental Justice

Refined Alternative 4 Impact 10 - Significant: Refined Alternative 4 limits the water supply available for the development of the proposed Navajo-Gallup Project designed to deliver drinking water to portions of the Navajo Nation with limited or no supply.

See discussion under Refined Alternative 4 Impact 2.

Mitigation for Refined Alternative 4 Impact 10 - See discussion under Mitigation for Refined Alternative 4 Impact 2.

Refined Alternative 4 Impact 11 - Significant: Refined Alternative 4 reduces the water supply available for the Jicarilla Apache Tribe Water Rights in the San Juan River.

See discussion under Refined Alternative 4 Impact 3.

Refined Alternative 4 Impact 12 - Potentially Significant: Effects on residences, school, and cemetery along the NNMP corridor.

The NNMP corridor would directly affect four residences and pass within 0.25 mile of a school and a cemetery on the Navajo Nation. Short-term noise and vibration impacts would occur during construction and affect nearby residences and the school.

Mitigation for Refined Alternative 4 Impact 12: Reduce impacts on residences, school, and cemetery.

The NNMP corridor would be routed to minimize, and to the maximum extent possible, prevent disturbance or relocation of residences and portions of the school facility. Prior to initiating any construction activities, project planners would meet individually with all property owners within 0.25 mile of the corridor. If any residences are required to be relocated, the residents and the Navajo Nation would be compensated according to the stipulations of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 USCA 4601-4655. Project planners would work to avoid any disturbance to the cemetery. As required under NAGPRA, consultation would take place with the Navajo Nation Historic Preservation Department and representatives from affected Navajo Nation chapters prior to disturbing any human remains or funerary objects. Additional mitigation measures would be used to minimize noise and vibration impacts. Construction activities would be scheduled during daytime hours (7:00 a.m. to 6:00 p.m.) when within 0.25 mile of a residence. Construction activities would be scheduled during non-school hours when feasible.

4.6.4.3.2 Refined Alternative 6

Potential impacts associated with Refined Alternative 6 as they relate to water resources are listed below. Impacts that could result to land and mineral resources and hunting and fishing rights would be similar to those described under Refined Alternative 4.

Refined Alternative 6 Impact 1 - Significant: Refined Alternative 6 does not fulfill the terms and conditions of the Settlement Act for the Colorado Ute Tribes.

While Refined Alternative 6 is meant to provide the same amount of water as the Settlement Agreement and as Refined Alternative 4, the Colorado Ute Tribes seem unwilling to accept the terms and conditions of Refined Alternative 6. On October 9, 1997, the Southern Ute Indian Tribe delivered a resolution (Resolution No. 97-160), which states:

> *[Alternative 6] will not meet the tribal objectives that were to be accomplished under the 1986 Settlement Agreement and the 1988 Settlement Act because among other things, that proposal does not provide the Tribe with certainty that it will receive a firm water supply from a reliable source that can be used to meet its present and future needs on the west side of the Reservation.*

Similarly, the Ute Mountain Ute Tribe delivered a resolution (Resolution No. 97-160) to the Lieutenant Governor of Colorado on October 22, 1997 that states:

> *The land and direct flow water rights fund and facility expansion proposed by the Animas River Citizen s Coalition fails to provide the Tribe with the basic commitment*

made by the United States and the State of Colorado in 1988 - namely a reliable supply of water to meet present and future needs of the Tribe.

Mitigation for Refined Alternative 6 Impact 1: Seek to modify the Settlement Agreement to coincide with the terms outlined for the Refined Alternative 6.

The statements above were made for Alternative 6 as originally presented. If the Colorado Ute Tribes agreed to the terms of Refined Alternative 6, then the Settlement Agreement could be modified similar to the description for Refined Alternative 4.

Refined Alternative 6 Impact 2 - Significant: Refined Alternative 6 limits the water supply available for the development of the proposed Navajo-Gallup Project designed to deliver drinking water to portions of the Navajo Nation with limited or no supply.

The development of Refined Alternative 6 would eliminate the water available for future uses out of Navajo Reservoir through a reduction of 20,000 afy (see Section 3.2). The 2,340 afy provided under the ALP Project would only satisfy a portion of the water needs of the Navajo Nation. The new NNMP would help meet current water demand in the Shiprock area and provide a means of obtaining water from the City of Farmington.

Mitigation for Refined Alternative 6 Impact: The following mitigation elements are possible:

- Operating Rules for Navajo Dam would be optimized to provide more efficient delivery of the flow recommendations for endangered fish, allowing more developable water for the proposed Navajo-Gallup Project.

- Reclamation could work with the Navajo Nation and the City of Gallup to continue development of the proposed Navajo-Gallup Project.

The following mitigation measures may affect the ability of the Navajo-Gallup Project to go forward, but are beyond the control of Reclamation as a part of the ALP Project:

- An alternate project design that would take water from the San Juan River below its confluence with the Animas River would increase the potential yield for the project while protecting flows for endangered fish. In this case, releases from Navajo Dam would be supplemental to river flows, leveraging the limited storage volume available and making use of times when there are flows in excess of fish needs in the river.

- The project could be modified to reduce demands.

- The Navajo Nation could elect to utilize a portion of the NIIP allocation to meet these needs.

- Additional irrigated lands above Navajo Reservoir could be acquired and the water transferred to Navajo Reservoir to meet these demands.

Refined Alternative 6 Impact 3 - Significant: Refined Alternative 6 reduces the water supply available for the Jicarilla Apache Tribe water rights in the San Juan River.

Refined Alternative 6 would reduce the water supply available to meet the water rights of the Jicarilla Apache Tribe. This impact is cumulative with the impacts to the water supply for the proposed Navajo-Gallup Project. Taken together, there is no additional water supply for either use, for an impact of 20,000 afy (see Section 3.2).

Mitigation for Refined Alternative 6 Impact 3: The following mitigation elements are possible:

- Operating Rules for Navajo Dam would be optimized to provide more efficient delivery of the flow recommendations for endangered fish, allowing more developable water for the Jicarilla Apache Tribe and the proposed Navajo-Gallup Project needs.
- Reclamation will facilitate discussions between the Jicarilla Apache Tribe and other parties with interests in the San Juan River Basin. Interested parties will include, but not be limited to, the Colorado Ute Tribes, Navajo Nation, the Service, and private parties with existing contracts from Navajo Reservoir. Discussions will aim to develop options for obtaining the 25,500 afy depletion from Navajo River or Reservoir, which is authorized under the Jicarilla Apache Tribe Water Rights Settlement Act.
- Additional irrigated land could be acquired and the water transferred to Navajo Reservoir to supply these demands.

Refined Alternative 6 Impact 4 - Significant: Refined Alternative 6 reduces the water supply available for completion of the Hogback Project in the San Juan River.

Refined Alternative 6 would reduce the water supply available to complete the Hogback Project, restoring 16,420 afy depletion transferred to NIIP for Section 7 purposes. This impact is cumulative with the impacts to the water supply for the proposed Navajo-Gallup Project and the Jicarilla Apache Tribe. Taken together, there is no water supply for these uses, for an impact of 20,000 afy (see Section 3.2).

Mitigation for Refined Alternative 6 Impact 4: The following mitigation elements are possible:

- Operating Rules for Navajo Dam would be optimized to provide more efficient delivery of the flow recommendations for endangered fish, allowing more developable water for the Jicarilla Apache Tribe, the proposed Navajo-Gallup Project, and Hogback Project completion needs.
- Reclamation will facilitate discussions between the Navajo Nation and other parties with interests in the San Juan River Basin. Interested parties will include, but not be limited to, the Colorado Ute Tribes, the Service, and private parties with existing contracts from Navajo Reservoir. Discussions will aim to develop options for obtaining the 16,420 afy depletion from the San Juan River.

The following mitigation measures may affect the ability of the Hogback Project to be completed, but are beyond the control of Reclamation as a part of the ALP Project:

- Private rights could be acquired to meet these needs.
- The project could be modified to reduce demands.
- The Navajo Nation could elect to utilize a portion of the NIIP allocation to meet these needs.

4.6.4.3.3 No Action Alternative

Without water delivery, present land use would not improve and utility of land would not increase. Water delivery is critical to the Colorado Ute Tribes ability to satisfy existing applications for settlement and to implement unit management and development plans.

The Colorado Ute Tribes have large mineral resources, especially natural gas and coal. Energy resources are expected to provide the overwhelming majority of Tribal incomes for the next several decades. Future energy development may not be possible without a readily available water supply.

No Action Alternative Impact 1 - Significant: The Colorado Ute Tribes water claims under the Winter s Doctrine on the Animas and La Plata Rivers would not be satisfied by the ALP Project.

Under the No Action Alternative, current Colorado Ute Tribal water claims on the Animas and La Plata Rivers would not be satisfied by the ALP Project and the terms of the Settlement Agreement would not be met, which would result in the Tribes exercising one of the options specified in the Agreement. If water is not available for use by the Colorado Ute Tribes by January 1, 2000, the Tribes may take one of the following actions within the following five years, and in consultation with the United States as trustee: (1) retain the project water rights; or (b) commence litigation or renegotiation of their pending reserved water rights claims on the Animas and La Plata Rivers.

Mitigation for No Action Alternative Impact 1: No mitigation is proposed.

No Action Alternative Impact 2 - Potentially Significant: By not receiving water from the ALP Project and developing the NNMP, an opportunity to obtain needed water would be foregone.

Since water would not be provided through the ALP Project, the Navajo Nation would have to develop other sources of water, most likely from Navajo Reservoir. A new proposal for obtaining water and constructing the NNMP would need to be developed.

A failure by the Colorado Ute Tribes to utilize the 39,960 afy of ESA depletion allocated them under the Administration Proposal would put the Jicarilla Apache Tribe and Navajo Nation in a position to obtain ESA clearance in the event that one or more new uses are identified by the tribes.

Mitigation for No Action Alternative Impact 2: No mitigation is proposed.

4.7 BIODIVERSITY AND SUSTAINABILITY

Biological diversity, or "biodiversity," has recently become a significant focus of land management agencies throughout the western United States. The loss of biological diversity is currently recognized as an important issue that may have ecological and economic consequences. Biodiversity focuses on native species or communities that are rare or under-represented, emphasizing the genetic, structural, compositional, and functional component diversity. While the wide-ranging vegetation types within the project area support many levels and scales of biological diversity, this section focuses on species and communities that are considered sensitive to disturbance.

Biodiversity is defined as the variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal

resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

The major grassland, shrubland, woodland, and forest types would, at the regional ecosystem level, define the primary scale of analysis for the ALP Project. These major ecosystem types extend over hundreds of square miles. In addition, a more detailed, local scale of analysis considers much smaller land areas encompassing community types of limited extent or specialized requirements. Examples of these more localized ecosystems include streams and rivers, the riparian zone associated with streams and rivers, natural wetlands, and wetlands associated with man-made facilities, such as irrigation canals.

The primary factors that alter biodiversity at the scales discussed above include climate and human activities. Elements of biodiversity that are directly affected by the activities associated with a water supply development project include the composition and abundance of native vegetation species, fisheries populations, and wildlife populations. Threatened and endangered species represent a special category of biodiversity because of their vulnerability to small habitat alterations. Human activities that influence biodiversity include habitat fragmentation from construction of corridors and settlement; agricultural activities, including diversion of streams for irrigation and the use of pesticides; livestock grazing; forestry; and surface disturbances associated with mineral extraction.

In relation to the ALP Project, the topics in this DSEIS that are related to maintenance or loss of biodiversity include vegetation (upland and wetland/riparian), threatened and endangered species, and wildlife and fisheries. Changes to water regimes and habitat types, such as the conversion of wetlands to upland vegetation, could affect species diversity locally and within a watershed. Notably, habitat for threatened and endangered species, such as the southwestern willow flycatcher, could be at risk due to this conversion, but non-protected wildlife that are equally important to biodiversity could also be affected.

In the context of maintaining biodiversity, the concept of resource sustainability has guided the planning of the ALP Project and the preparation of this environmental analysis. In this DSEIS, the concept of sustainability refers to the maintenance of a landscape and lifestyle in some agreed-upon form that includes both a space for human economic activity and a space to preserve the ecosystem under natural controls and evolution. Sustainability presumes a certain value in the landscape as nature managed it and seeks to preserve a functioning remnant of that world under the pressure of human presence.

To this end, Reclamation is taking an ecosystem approach to mitigating the impacts of the ALP Project. The incorporation of bypass flows into the operation of Ridges Basin Reservoir and protection of instream flows for native and endangered fish species would contribute to the sustainability of these resources. Procurement and management of a single large tract of land to enhance wetland/riparian, fisheries, and wildlife habitats would benefit the diversity of plant and animal species in an area that has and will continue to undergo habitat fragmentation as a result of residential development. Although the ALP Project may locally reduce biodiversity, species composition and population are not static, and project effects with appropriate mitigation are unlikely to exceed natural variability or the variability attributed to activities unrelated to the project.